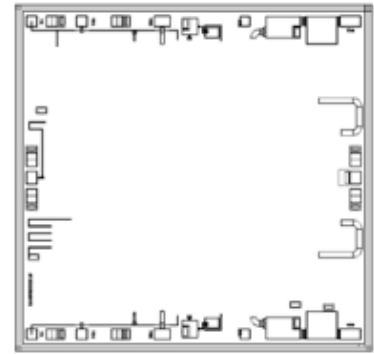


AMT2114
12 – 18GHz Power Amplifier Chip



Key Features :

- Frequency : 12 – 18GHz
- Typical small signal gain : 29dB
- Typical output power : 45dBm
- Typical power added efficiency : 30%
- Supply voltage : 28V, -2.4V
- Chip dimensions : 3.5mm x 3.4mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT2114 chip is a high performance high efficiency 12 – 18GHz power amplifier, it is designed based on Gallium Nitrate (GaN) HEMT process, with ground through metal via on the back technology. All chip products are 100% RF tested. AMPA0032S is with dual voltage supply, drain voltage Vds at 28V, it provides 45dBm output power in 12 – 18GHz frequency range.

Absolute Maximum Ratings (Ta = 25°C)

Symbol	Parameter	Value	Remark
Vd	Drain Voltage	35V	
Id	Drain Current	5A	
Vg	Gate Voltage	-1.5V	
Ig	Gate Current	150mA	
Pd	DC Power Consumption	120W	
Pin	Input Signal Power	30dBm	
Tch	Operating Temperature	150°C	
Tm	Sintering Temperature	310°C	30s, N ₂ protection

[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

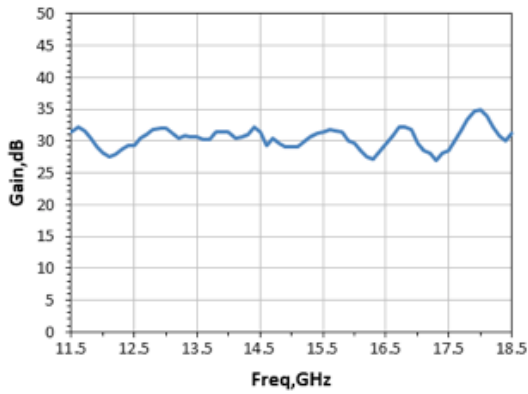
Electrical Characteristics (Ta = 25°C)

Symbol	Parameter	Test Condition	Value			Unit
			Min	Typical	Max	
Gain	Small Signal Gain	Vd = 28V Vg = -2V F : 12~18GHz Duty Cycle : 10%	-	29	-	dB
VSWRin	Input SW		-	1.5	1.8	dB
Pout	Saturated Output Power		-	45	-	dBm
PAE	Power Added Efficiency		-	30	-	%
Id	Operating Current		-	3.5	-	A

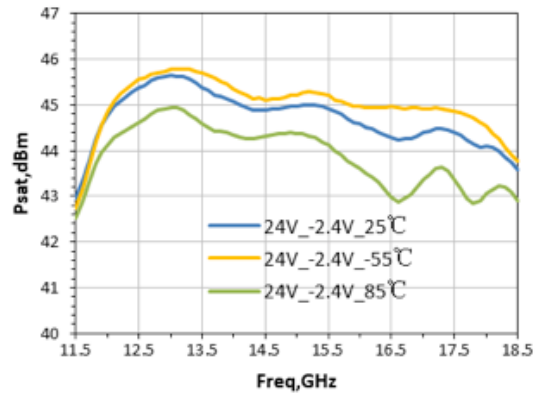
Note, under non-CW operation.

Typical Performance

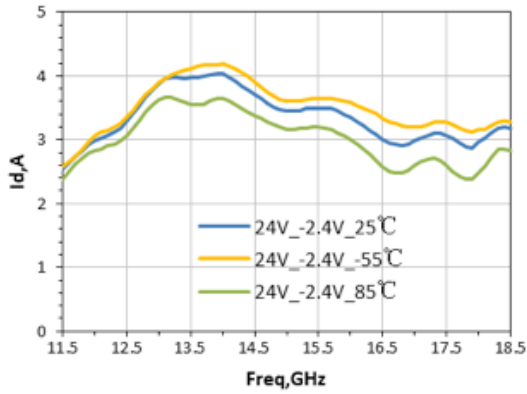
Small Signal Gain at Room Temperature



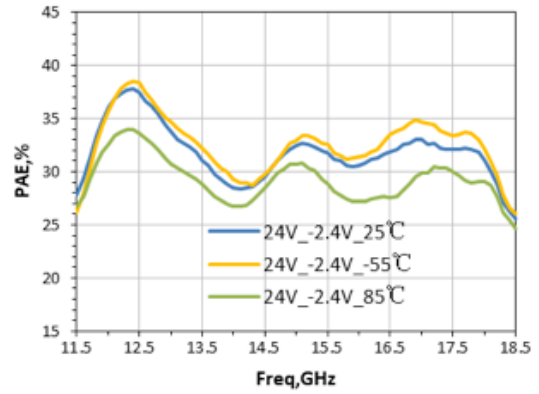
Output Power at Vd = 24V



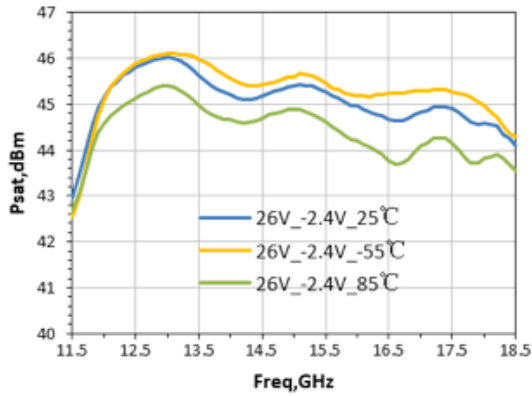
Drain Current at Vd = 24V



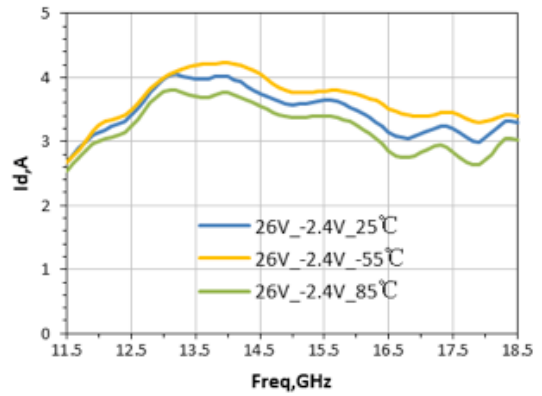
Efficiency at Vd = 24V

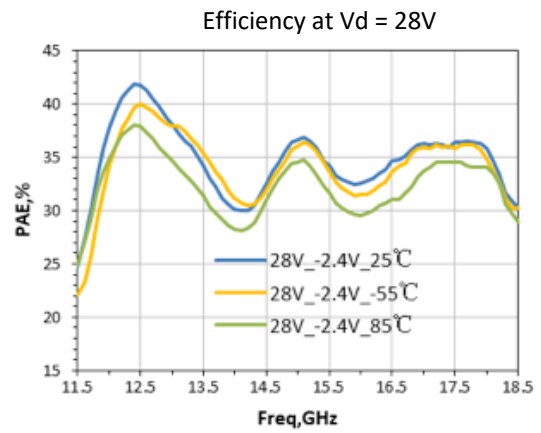
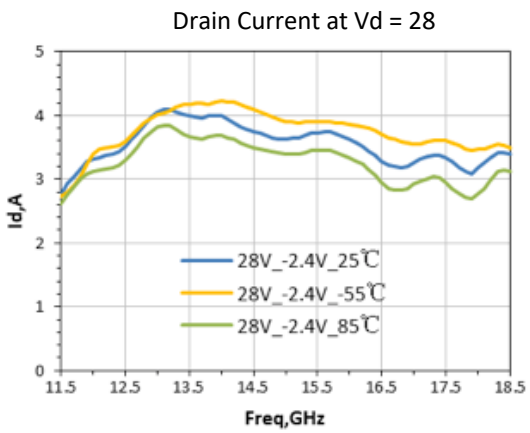
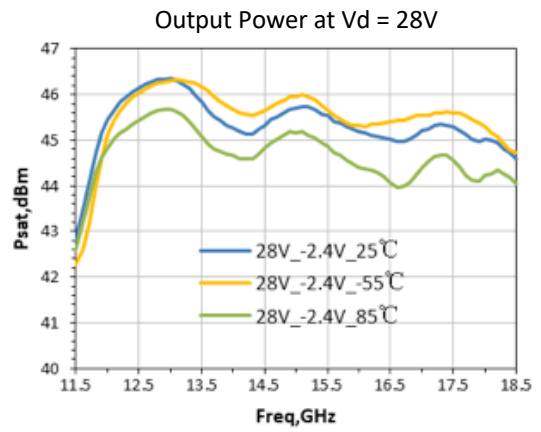
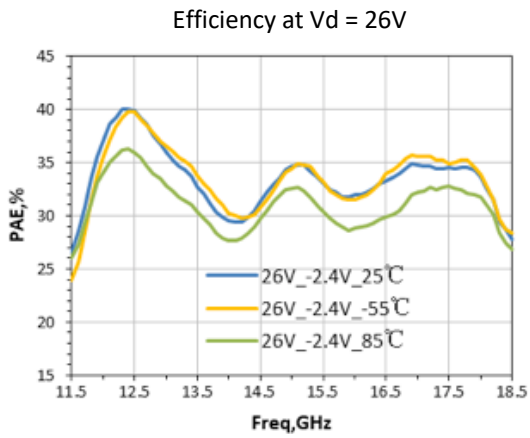


Output Power at Vd = 26V

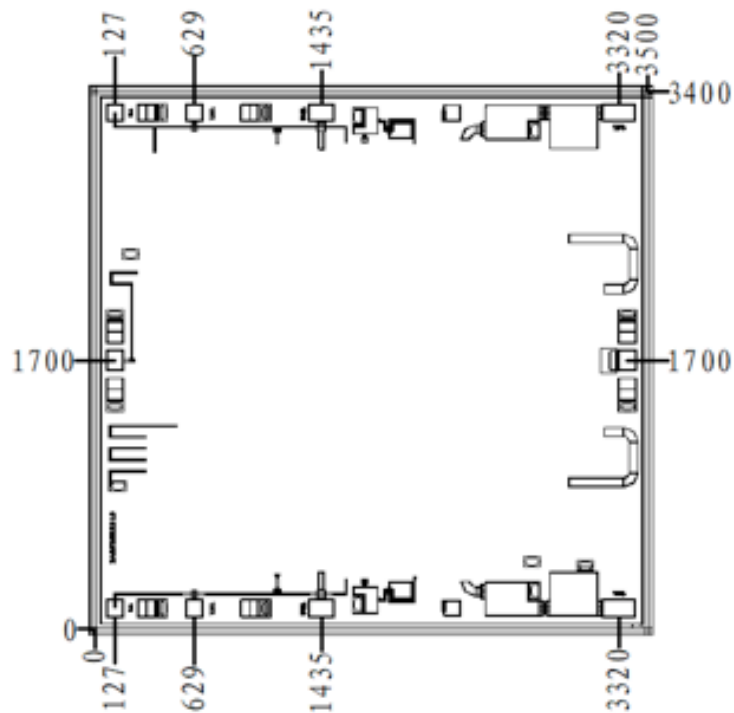


Drain Current at Vd = 26V

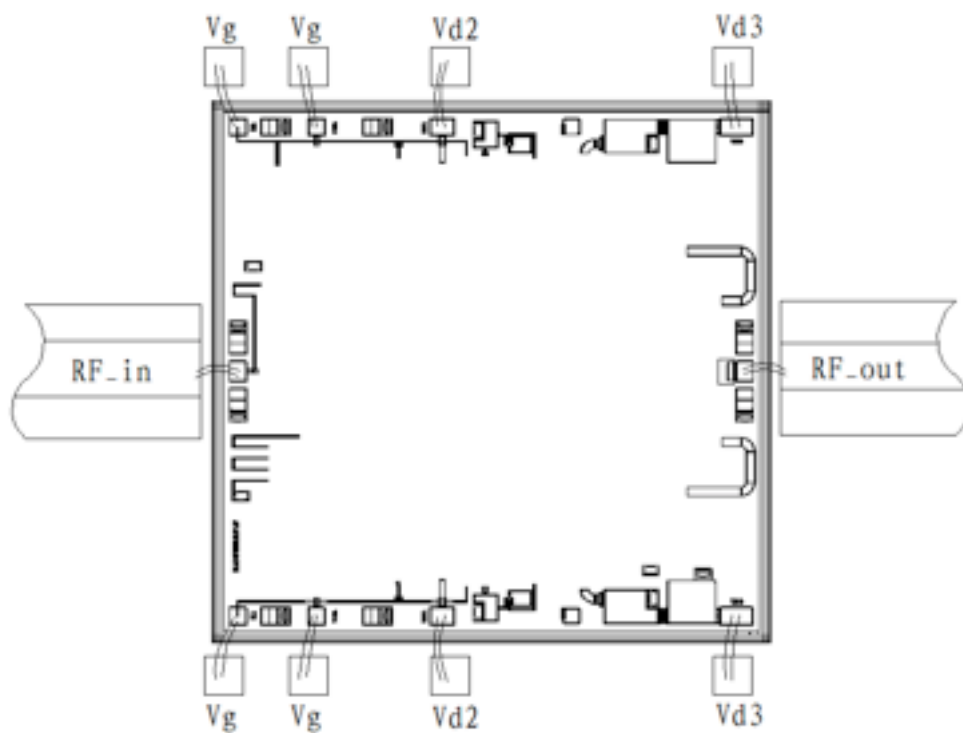




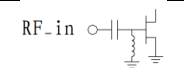
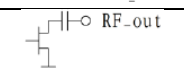
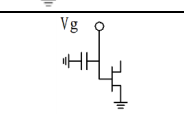
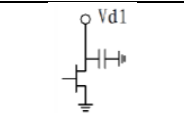
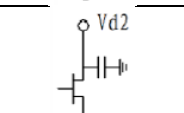
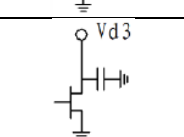
Chip Dimension (Unit : μm)



Chip Layout Diagram



Pad Definition

Symbol	Function	Dimension	Equivalent Circuit
RF_in	RF signal input port, connecting to external 50Ω system. DC blocking capacitor is needed, if external DC current is applied to this pad.	100*120μm ²	
RF_out	RF signal output port, connecting to external 50Ω system, no need to add DC blocking capacitor.	100*120μm ²	
Vg	Amplifier gate bias, need external 100pF, 1000pF capacitor.	100*100μm ²	
Vd1	Amplifier drain bias, need external 100pF, 1000pF capacitor.	100*100μm ²	
Vd2	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*100μm ²	
Vd3	Amplifier drain bias, need external 100pF, 1000pF capacitor.	200*100μm ²	

Refer to Appendix A for details.